

beetles seem to thrive well under this arrangement. They soon start mating and laying eggs in the sand.

In course of time, the eggs hatch into larvae and small circular openings of the larval burrows appear on the surface of sand. The highly predaceous larvae catch the leafhoppers and feed on them. They grow and pass through metamorphosis and generation after generation of these beetles can be reared and maintained successfully in this manner. A few of the eggs are laid very close to the walls of the jar and the larvae hatching from them invariably excavate their burrows close to the walls of the jar. Though some of these burrows take their course to the interior of the jar, occasionally, a few of them are excavated directly along the inner surface of the wall which therefore forms part of the inner surface of the burrow itself. In such a case, the interior of the entire burrow from top to bottom can be clearly seen through the transparent glass wall. This situation gives the worker an excellent opportunity to observe the behaviour of the larva inside the burrow, particularly relating to the method of excavation of the burrow, locomotion and feeding. The course and structure of the burrows can also be studied. The behaviour of the adult beetles can also be easily observed through the walls of the jars.

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## 20. CANNIBALISM IN THE COFFEE BEAN WEEVIL *ARAECERUS FASCICULATUS* DE GEER (COLEOPTERA : ANTHRIBIDAE)

Among coleopterous pests of stored products, egg cannibalism has been studied in detail and in relation to population density in the flour beetle, *Tribolium confusum* Duval by Boyce (1946)<sup>1</sup>. The coffee bean weevil, *Araecerus fasciculatus* De Geer, which is a serious pest of stored coffee bean, arecanut, tapioca chips, grains etc., also exhibits cannibalistic tendency under certain conditions. The adults have been observed to eat the eggs as well as the adults of their own species in the rearing jars in the laboratory. The factors which prompt a small fraction of the popu-

<sup>1</sup> BOYCE, J. M. (1946) : The influence of fecundity and egg mortality on the population growth of *Tribolium confusum* Duval. *Ecology*, 27 : 290-302.

lation of these beetles to resort to cannibalism are not clear as they have been observed to do so even in the presence of abundant food, living space and at low densities. In a rearing jar of two litre capacity containing 25 beetles and supplied with 10 grammes of food, about two or three beetles tended to be cannibalistic. In a case which was watched, a beetle seized another from the front. At the beginning, the two faced each other. The cannibalistic beetle held the other with its legs and started nibbling and biting it in the cervical region repeatedly. After repeated attacks which were accompanied by a considerable amount of struggle, the prey beetle was immobilised, after about 15 minutes. Other beetles in the jar which happened to come into contact with the dead beetle apparently showed no inclination to feed on it. The preying beetle then turned over the body of the dead beetle, exposing its ventral side and started consuming it from the abdominal region. After feeding for about 15 minutes, the beetle deserted the prey, leaving behind only its head, thorax, wings and some cuticular parts of the abdomen.

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## 21. A SIMPLE CASE OF LEARNING IN THE ANT, *CAMPONOTUS* SP., (HYMENOPTERA : FORMICIDAE)

Though the intelligence of ants in the strict sense is limited, their capacity to learn from experience or training in artificial nests in the laboratory can be assessed by a number of tests such as those listed by Skaife (1961)<sup>1</sup>. The authors have been maintaining a colony of the ant, *Camponotus* sp., in an artificial nest designed by them out of a circular plastic container, for the past six months and have observed the following simple but interesting instance of learning in this ant.

The ant mentioned above is in the habit of dumping rubbish consisting of remains of food, exuviae of larvae, dead ants, and excremental pellets into a few small heaps, a little distance away from a corner of the artificial nest where the members of the colony congregate. The authors tried to train the ants to collect and dump the rubbish matter in one place. Therefore, the rubbish from all the heaps was collected and put by the authors, inside a shallow, small container at one end of the nest away from the side where the colony had settled down. Then, whenever the

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<sup>1</sup> SKAIFE, S. H. (1961): The study of ants. Longmans, Green and Co. Ltd., London, pp. 178.